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# The JOURNAL of GEOGRAPHY

VOLUME XLIV JANUARY, 1945 NUMBER 1

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Dr. Stephenson is Associate Professor of Education and Head of the Department of Social Studies, University High School, University of Michigan. He is also a member of the Advisory Board of the National Council for the Social Studies. Not being a specialist in the field of geography, Dr. Stephenson evaluates geography from the standpoint of its contribution to the education of our youth. This is the ninth in our series of articles on what secondary school geography should be.

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Dr. Freeman is on leave of absence from Eastern Washington College of Education, for war service instruction at the University of Indiana. Dr. Freeman's many contributions to the field of scientific and educational geography make him well known to JOURNAL readers.

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Dr. Corfield, on leave from the State Teachers College, Duluth, Minnesota, is a frequent contributor to the JOURNAL and other geographic magazines. "Spanish Moss: Forest By-Product of the South," appeared in the JOURNAL for November, 1943. Dr. Corfield had charge of the work in geography for A.S.T.P. at St. John's University, Collegeville, Minnesota.

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Dr. Blanchard of the University of Illinois, is well known to JOURNAL readers and also to teachers thruout the country who have used his texts. As a side line, Dr. Blanchard has gotten a lot of pleasure out of the formation of interest-stimulating devices. He has provided us with a series and we will publish them in future issues of the JOURNAL. This is the third one in the series. Both teachers and students will find it eminently worth-while to answer the questions which he has raised. It is not our intent to publish a set of answers.

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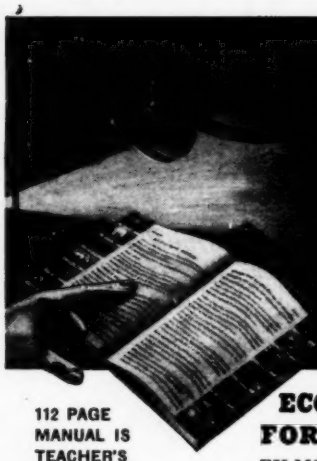

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VOLUME XLIV JANUARY, 1945 NUMBER 1

# STILL MORE GEOGRAPHY IN THE SCHOOLS?

O. W. STEPHENSON
University of Michigan

Many times since Pearl Harbor the question has been put to me: Do you think that more geography should be taught in the schools? Indeed, everyone interested in education seems to be asking this question: classroom teachers; parents and school administrators; men and women in the armed forces; members of boards of education; state school officials; college professors; publishers of textbooks; and even the pupils themselves. The same question was asked during and just after World War I. At that time geographers urged in the strongest terms that more geography be taught since there was "a general conviction of the necessity of geographic training as an equipment for life."[1] Such a conviction appears to exist at the present, especially thru courses in world geography. But those who are convinced that more stress should be placed upon geography are not so sure as to how or at what grade levels. My own answer to the main question is invariably "Yes." However, that answer never quite ends the matter; dependent questions immediately follow which I find far less easy to answer: Would you put more geography in the elementary grades? In the high school? Or in both? Would you offer it as a separate subject, or would you teach it incidentally and in correlation with history and the other social studies?

## WHY A DEMAND FOR MORE GEOGRAPHY?

Such questions arise now, just as they did a quarter of a century ago, as a natural consequence of the high interest in geography and physiography as they bear upon the present global war. They arise

[1] O. D. von Engeln. "A Campaign for Geography," JOURNAL OF GEOGRAPHY, XVIII, No. 1 (Jan., 1919), 29.

from the desire of large numbers of people to possess a better understanding of the causes of the great conflict; from a desire to know the location of the more important places, particularly strategic, referred to in books about the war, and in magazines, newspapers, public addresses and over the radio. They arise, too, from a desire to follow the day to day progress of the war, and from a desire to know more about natural conditions and life in the countries where Uncle Sam has asked our loved ones to serve.

### PUBLIC'S IGNORANCE OF GEOGRAPHY

The ignorance of the American public as to the causes of the present war was little short of appalling. Most of our citizens did not know why the war was said to be, with partial truth at least, one between the "haves" and the "have nots."[2] Before December 7, 1941, people in this country generally had little precise information as to the character and extent of the natural resources of other lands, what nations controlled these resources, how they were obtained, or the process by which they were converted to the use of man. Far too many did not know what the geographical and physiographical conditions were like in the regions where the chief raw products of the "have" nations were obtained, or how these conditions affected the lives of the people in those regions. If geography can give us "an understanding of earth conditions and natural resources as the material basis of social development by showing the relationships which exist between natural environment and the distribution, characteristics, and activities of man,"[3] and we did not then possess that understanding, surely something vastly worthwhile must have been lacking in our total fund of information.

The public's lack of knowledge of geographical and physiographical conditions and their affect upon man's ways of living was matched by its lack of knowledge of place location. Almost no one, geographers and militarists excepted, knew what places would be of major strategic importance in case of a general war. Few knew where to look on a map or globe for El Alamein, Saipan, or the Kerch Peninsula; and fewer still could tell the location or military

[2] L. A. Mander. "The Interdependence of Nations and Individuals," Citizens for a New World. Fourteenth Yearbook, pp. 34-36, 47. Washington, D.C.: National Council for the Social Studies, 1944.

[3] R. D. Calkins, *et al.* "Tentative Formulations of (1) the Purpose of the Social Studies in the Schools and (2) the Distinctive Contribution of Each Field of Study." JOURNAL OF GEOGRAPHY, XXII, No. 2 (February, 1923), 79.

significance of Corregidor, Rangoon, or the Burma Road. As for locating any considerable number of the thousand and one places to which the men and women in the service have since been sent, that was quite out of the question.

Since our entrance into the present global war, much of this ignorance has disappeared. What happened more than two decades ago has happened again: students, teachers and others have become world geography conscious. "World War I" opened the eyes of business men, statesmen, and the military, to the fundamental need of the very range of information and interpretation which geographers had been developing. The geographers began to come into their own in conspicuous service to the nation. Now the great business houses begin to discover that training in economic geography holds large possibilities for service, in the extension of foreign trade, and as this appreciation grows, the support of economic geography in the schools becomes more pronounced.[4]

## WORLD WAR II INCREASES INTEREST IN GEOGRAPHY

In the same way, the present war has greatly increased the interest in the interdependence of nations and individuals,[5] the distribution of natural resources, the nations that control these resources, and the processes by which they are made fit for the use of man. They are far better informed as to places which were or may be of strategic importance in this war, and they have a better knowledge of place locations thruout the world than they ever had before. They have, moreover, a greater appreciation of geography as a subject for study in peace times and this interest will continue after school days have ended.

## A MAJOR OBJECTIVE AND ITS ACHIEVEMENT

Thus it has become a generally accepted objective that boys and girls shall be helped to understand and appreciate the relation between geographical and physiographical conditions and the way in which man lives wherever he makes his home. That this objective is being attained is evident from the phenomenal increase and sale

[4] J. Paul Goode. "The Trend in Economic Geography." JOURNAL OF GEOGRAPHY, XXI, No. 3 (January, 1922), 18.

[5] An excellent tho brief treatment of this subject is given by L. C. Mander ,"The Interdependence of Nations and Individuals." Citizens for a New World, pp. 26-62. Washington, D.C.: Fourteenth Yearbook of the National Council for the Social Studies, 1944.

of maps, globes, atlases, and publications which deal with current affairs, as well as from the large amount of time given by radio commentators to the war and geographical considerations which bear upon it. While it is true that, for a quarter of a century, commercial and technical high schools have been offering courses in commercial and economic geography, the subject has not been taught to any extent in non-technical high schools above the eighth grade. In this latter type of high school, teachers of history and the other social studies have spent much time on geography, treating it incidentally, particularly in connection with current events having to do with the progress of the war. In fact, it has been a common experience of teachers that they have given so much time to these events and to geography in relation to them that they have not been able to "cover" nearly as much "ground" as they had covered in previous years.

## MORE GEOGRAPHY WHEN?

As for the main question, whether more geography should be taught in the schools, the answer, if any, should be given, not so much as it applies to present times, but as it will apply to the times after the war has been won. Then, of course, many of the reasons now advanced for more attention to the subject will no longer exist: The average person will have only an historical interest in the places which were of great strategical importance; there will be no more battle lines to trace out on a map; and the men and women in the service of their country will be coming home to follow the pursuits of peace in schools, in offices, in factories and on the farms. Nevertheless, a keen interest in geography will remain because we have become more international in our thinking and because we have a greater appreciation of the "interdependence of nations and individuals." Before World War I it was charged against us that we gave little attention to geography in the high school because of "a certain narrowness of vision which confined our view to our own boundary lines; in a word, to our inability as a nation to think internationally."[6] It is partly because of a change in our thinking that the writer would still give an affirmative answer to the main question, even tho that answer were to be applied only to the period of peace after the last shot of the present war has been fired.

[6] William S. Kies. "Foreign Investments After the War." *The Nation,* Section II (October 18, 1918), 461.

## THE CASE AGAINST MORE GEOGRAPHY

But before we suggest how this may be done without disturbing the *status quo* as far as subjects already in the curriculum are concerned, let us consider some of the arguments commonly advanced against including more geography in the program of studies. Some point out that it had already gained a position of prominence in this program soon after World War I ended, and that an increasing amount of stress has been put upon it ever since. For example, some years ago it was estimated that 8.8 per cent of the reading material used in the first grade was geographical in character; that, in the second grade, 34.2 per cent of this material was geographical; and that, in the third grade, 56.0 per cent of the material was geographical in character. In most school systems, in all grades from the fourth thru the seventh, and in many systems thru the eighth grade,[7] geography was taught as a separate subject, tho usually in the fourth grade it was taught incidentally as part of units on the Dutch, Swiss, Eskimo, Japanese, Chinese or/and the American Indian. If not taught as a separate subject in the first half of the seventh grade and in the last half of the eighth, it was taught incidentally in "Old World Background" courses and in courses which covered the history of our country. For many years, moreover, commercial and technical high schools everywhere, and many agricultural schools, have required commercial geography for graduation, and a large number of non-technical high schools have offered it as an elective.

The growing emphasis on geography in the schools has been reflected in the greater number of textbooks published in the field of geography, in the increased amount of geographical content found in textbooks of history and the other social studies, in the wealth of library materials which have come from the press, in the amount of space given to geography in printed courses of study, and in the abundance of new teaching equipment produced for classroom use, especially in the great variety of maps and globes. All of these additions are a tacit recognition of the fact that geography is the basis for an understanding of human relations and of man's ways of living in both past and present times.

Those who are opposed to putting more geography in the school program not only contend that the subject is already receiving as much attention as it deserves, but that there is no more room in the

[7] Edgar B. Wesley, Director of the Committee. "Report of the Committee on American History in Schools and Colleges," p. 66. New York: Macmillan Co., 1944.

program for it. Those who take this view affirm that none of the studies now in the curriculum can be omitted without losing more than would be gained if more of it were included. Would you omit either the one-year or the two-year course in world history? they ask. Or the courses in American history? Or government? Or economics? Or any of the other studies? The Committee of the American Historical Association on American History in Schools and Colleges endorses continuing the study of the various social studies "both separately and in meaningful combinations."[8] If it suggested that geography be added as a separate subject, it is pointed out that that would mean more classroom space in buildings already overcrowded; new teachers or a heavier load on those already employed; more textbooks and library materials; new teaching equipment; and a readjustment of credits for graduation from high school and for entrance to college.

## THE CASE FOR MORE GEOGRAPHY

The arguments now offered *for* teaching geography in times of peace are identical with those advanced immediately after World War I. At present, however, there are additional ones. They have stemmed from the fact that we have become more international in our thinking, and have a much greater appreciation of the interdependence of nations and individuals. As a consequence of our global interests, world geography has assumed a place of greater importance as a school subject. It is now relatively more valuable in the curriculum than it was in the days of our smug provinciality and room must be found for it, therefore, either as a separate subject or in correlation with other subjects in the school program.

The comprehensive objective as phrased by Calkins[9] would be acceptable to most educators, doubtless, as expressing in one sentence the main purpose of teaching geography in the schools. This general objective may be thought of as including such subordinate or dependent objectives as those stated by Barrows and Parker[10] for the elementary grades, tho they seem to the writer to apply about equally well to world geography if it were to be offered in any of the higher grades:

[8] Wesley, *op. cit.*, p. 62.

[9] *Op. cit.*

[10] Harlan H. Barrows and Edith Putnam Parker. "Elementary Geography: Objectives and Curriculum." *The Elementary School Journal,* XXV. No. 7 (March, 1925), 494, f.

### OTHER MAJOR OBJECTIVES

1. "... to emphasize the application of geography to the immediate problems of life; to show *how* men live, *what* they do, and, so far as practical, *why* they live and work as they do in different environments in various parts of the world; to establish a background which will aid the pupil in later fitting his own life intelligently into his physical surroundings or in choosing surroundings to which his capacities are suited."

2. "... to give the pupil a knowledge of the location and character of the leading surface features of the earth (continents, oceans, mountains, plains, rivers, lakes, cities, etc.) *in their relationships to human activity,* but never as isolated facts."

3. "... to give a sympathetic understanding ... of the conditions and problems of the peoples of other countries which are associated with, and grow out of, the kinds of lands in which they dwell; to help the pupil to get the point of view of foreign peoples."

4. "... to show the dependence of man on earth conditions and earth resources as the material bases of social development and to bring out the economic interdependence of the peoples of different countries."

5. "... to point the way to better uses of land and of natural resources."

### SECONDARY OBJECTIVES

According to Barrows and Parker,[11] too, the attainment of these five objectives, by methods the latter suggests, "will realize as by-products several secondary objectives: (a) the laying of a sound foundation for related work at higher levels; (b) the promotion of exact thinking; (c) the giving of a working knowledge as to how to secure geographical information thru the interpretation of maps, pictures, and museum, out-door, and graphic materials; (d) training in the use of books, indexes, statistical tables, references, and the like; (e) training in right methods of study; (f) the cultivation of an interest in present-day affairs that will make for wider reading in leisure hours, during and after the study of geography in school; (g) the development of the habit of applying geographical principles, whenever practicable, in the interpretation of current problems.

[11] *Ibid.*, pp. 498-499.

### SIGNIFICANCE OF OBJECTIVES IN THE POST WAR PERIOD

All of these objectives are attainable whether the nations are at war or at peace, but they will take on new significance after the present war is over. Then, as in 1919, the whole world will be "agog with the problems of reconstruction, and these can be safely solved only on a geographic basis. The future of our country in international trade and relations looms large; to understand the possibilities before us wide geographic knowledge is essential."[12] Necessarily our international thinking will have to be of such a character as to remove the causes of war and at the same time promote international understanding and good will. Whether this will be accomplished remains to be seen. But if it *is* accomplished, some of the major grievances of the "have not" nations will disappear, there will be a more equitable distribution of the natural resources of the world, most of the tariff barriers will be lowered or done away with altogether, trade agreements will be fairer, and it will be recognized everywhere that the laborer is "worthy of his hire."

Tho these great goals may not be reached for many years after the end of the period of reconversion and demobilization, others which the several allied nations have in view will be striven for without loss of time. Plans already laid call for a vast expansion in the facilities of transportation by sea, air and land, for the conservation and use of human and natural resources, for improved housing conditions, and for marked advances in the methods by which raw materials are acquired and are produced and distributed. None of these consummations can be appreciated or understood unless one has a rich knowledge of geography and its relation to man's ways of living and their attendant problems. It is such considerations as these that will cause many schools to offer a course in world geography in the higher grade levels.

### HOW MORE GEOGRAPHY CAN BE PROVIDED

In schools where no place can be found at the higher grade levels for a separate course in geography, much geographical information can be presented in correlation with current events, civics or government, economics, history and special problems. This can be accomplished thru illustrations of basic generalizations upon which most of the content of textbooks on geography has been developed.

[12] O. D. von Engeln, *op. cit.*, p. 29.

By the citation of appropriate examples these generalizations can be made meaningful to pupils. Conversely, as Wesley points out, "Many details . . . are primarily raw materials which are utilized in building up generalizations, and critical abilities. Facts are important, but they are the means toward the larger objectives."[13] But whatever the process, deductive or inductive, experience which the pupils gain in applying the generalizations will give them deeper understandings than they could acquire without them and they will be able to appreciate new situations better than ever.[14]

### MAKING USE OF GENERALIZATIONS

Space forbids a full discussion of the possible applications of geographical generalizations to the topics treated in the several social studies at the higher grade levels. We shall limit ourselves, therefore, to a few in the field of American history. But what we say will suggest generalizations and applications in other fields.

An examination of six widely used textbooks on geography shows that their content is largely an elaboration of basic generalizations which have to do with geographical, climatic and physiographical conditions of our country: harbors; river systems; mountains; valleys; plains; arid regions; distribution of natural resources; temperature; length of the growing season; rainfall; winds; altitude, etc. The generalizations we have selected can be applied to most of the major movements and events in the history of our country: early settlements; immigration and emigration; the westward movement; the development of agriculture and industry; exploitation of natural resources; transportation and communication; financial affairs; sectionalism; political events; wars; internal improvements, and education. The alert, well informed teacher will be quick to illustrate these and other pertinent generalizations and will encourage the students to do the same.

1. Migrations of people are caused, in part, by insufficient resources in the regions where the migrators have lived, or because of greater advantages of freedom, resources and comfort in the regions to which the migrators are bound.

2. Available or potential supplies of basic necessities help to determine both the direction and the speed of migrations.

[13] Edgar B. Wesley. *Op. cit.*, p. 3. Also, "The Social Studies: Report of Work in Evaluation by the Social Studies Group Participating in the Progresssive Education Institute," held at Columbus, Ohio, June 22-July 29, 1936, p. 2. Columbus, 1936.

[14] Edith P. Parker. "The Nature of Units in a Course of Study in Geography." *Baltimore Bulletin of Education,* VII. No. 3 (Dec., 1929), p. 53.

3. Usually the settling places of a migrating people are at or near the mouths of rivers, or at the confluence of two or more streams. Many times such settlements are made and grow at the intersections of trade routes, where such routes intersect, where they break, or at their extremities.

4. Fall lines, because of their hindrance to navigation and their store of power, play an important part in the settlement of new lands.

5. Natural boundaries prevent, retard, or encourage migrations and trade, depending upon their nature, extent, and duration.

6. The number, distribution and elevation of mountain passes have a direct bearing upon the problems of transportation and communication by land.

7. The extent of a country's area has a direct bearing upon the problems of transportation and communication.

8. In general the spread of population is up the valleys of rivers.

9. River valleys usually represent the lines of least resistance to those who push out a frontier, the rivers in these valleys afterwards lending themselves to the economic advantage of the people who live along their banks.

10. A river system is a natural bond for the people who live along its members, the general direction of the flow of the system guiding the drift of commercial intercourse and making easier political combinations of those people.

11. The abundance of waterways in the East, and the paucity of waterways in the West greatly differentiated the economic and political history of the two regions.

12. Geographical isolation is an important factor in accounting for the small amount of rivalry which may exist between two peoples.

13. People who live in regions having similar physical endowments tend to develop similar civilizations.

14. When two bodies of water, or the headwaters of two navigable streams are near each other, and when the intervening lands are low or of approximately the same altitude, the extension of navigation by a connection between the two is suggested.

15. Trade routes connect centers which have a surplus of economic goods.

16. Regions which have an unusual combination of two or more valuable physical factors enjoy special economic advantages which effect the history and political and economic thinking of the people of those regions.

17. People can prosper in regions where the physical endowments are poor if adequate substitutes can be provided.

18. The nature, quantity and quality of the agricultural products which can be raised in any region depend upon such primary factors as soil, temperature, rainfall, length of the growing season, winds, altitude, etc.

19. Regions change their major economic interests because methods employed in agriculture, manufacturing, and in communication and transportation change, or because the supply of natural resources changes, or because of a change in the demand for these resources.

20. The size and wealth of a population depend chiefly upon the presence, nature and availability of the natural resources of the region they inhabit—the extent to which it can support human life and realize on its economic goods.

21. The extent and nature of a country's commerce is dependent, in large measure, upon its size, location, zonal extent and various geologic and physiologic features which tend to modify natural conditions.

22. The improvements man makes in natural routes of commerce enable him to produce and market goods which he otherwise could not produce and market.

23. Cities tend to grow up where there is an abundance of natural resources and where it is easy to dispose of surpluses.

24. The growth of cities is conditioned by the capacity of the people in other places to dispose of their surpluses, viz., the market these places offer for their goods.

25. Cities develop on coasts because of the middle position they occupy in the commerce of other continents or areas, and the lives of their people reflect the prosperity and advantages of trans-oceanic markets and coastwise trade.

It is obvious, now, why the answer to the main question is "Yes." I think that more geography should be taught in the schools. It should be taught in the same grades where it has been taught for a long time, and in the upper grades in correlation with history and the other social studies as well and in a separate course if that is at all possible. The curriculum *must* catch up with our thinking, and that thinking *must* continue to be international in its scope.

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## WILL GEOGRAPHY BE A CORE SUBJECT IN THE POST-WAR SECONDARY SCHOOL CURRICULUM?

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Geographers the nation over anticipate a bright future for their subject. What World War I did to put geography on the educational map of this country, World War II, they say should repeat with compound interest.

People in all walks of life are discussing geography today and this is a good sign. The geographer, however, is apprehensive when people use glibly the term "geography" when they really have no concept of what modern geography is. In no other discipline do so many untrained persons feel competent. Such persons seem to have a dearth of humility when it comes to the subject of geography. Probably no other discipline is so little understood or so greatly misunderstood. Actually the gulf between the average concept of geography and the real geography is deep. In fact, many educators—and unfortunately for geography, many whose decisions are all important—still look upon geography as dealing solely with that deadly nausea of place location. Conversely, many school heads do appreciate the true meaning and value of geography.

This would seem to indicate that our problem of geographic instruction has not been successful. To what is this impasse due? It would appear that two conditions are responsible: (1) The subject has not been well organized for purposes of teaching. It has needed closer cooperation between the teacher, principal, and su-

perintendent on the one hand, and the specialist in the university on the other; (2) The brand of geography taught, that is, "sailor geography," which contained little of true educational value. While all will agree that New England sea captains needed to know how to reach their destinations and return home, there was little excuse for geography books bristling chiefly with locations which were ground into the minds of children everywhere.

Geography was then defined as the location of things on the earth. Under such a definition, geographic education was destined to wilt. To be sure, place geography and space relationships continue as necessary tools but they should not be taught *per se*. In teaching modern geography, that is, human geography, special techniques which do not kill the interest of boys and girls are employed in treating places. The good geography teacher, having learned the virtue of restraint, has his students learn *only* those places that are significant.

It is not the purpose of this paper to discuss the question "what is geography?" But the subject has come a long way since the days of "sailor geography." During the past quarter of a century geography has undergone swift advance: each year has witnessed a deepening realization that the subject is really a study of cause and effect, an *explanation* of things, a basis of understanding and of interpreting the earth in terms of its usefulness to man. Thus considered, it assumes value in agriculture, mining, lumbering, fishing, manufacturing, transporting, and trading as well as in citizenship. Geography may be considered as the bridge over the gap between the social and the natural sciences.

## Why Study Geography in the High School?

Geography as a high school subject has been efficiently hamstrung by the so-called social studies. If geography is to take a place of importance in the high schools of the nation, it can do so only when proved to be more valuable than certain competitive subjects. Many school administrators have not taken the time to keep abreast of geography's transformation. This is understandable in an age of specialization. It is up to geographers, then, to prove that geography has something that every high school boy and girl needs.

Undoubtedly the most important contribution geography can make to the education of a high school student is to train him for citizenship; citizenship of the village and the city, of the township

and the county, and of the state and the nation, but most of all citizenship of the world.

The Air Age has put us at the threshold of a new era. We know now that the United States does not and cannot live alone in the world. If it be true that no spot on earth is more than sixty hours from the nearest airport, then the day is gone when we were creatures of our narrow locale. No longer can the world be compartmentalized into continents or even hemispheres. When human security is disturbed anywhere on earth, it is immediately threatened everywhere. The great lesson of aviation taught by the present war is that our globe is a terribly small place.

Americans, on the other hand, are among the world's greatest civilized geographical ignoramuses. American public opinion has not been in harmony with the facts of geography as these now operate in the shrunken global community. Geography is needed to lift the individual out of his local habitat and give him a broader outlook on his world.

### GEOGRAPHY VS. SOCIAL STUDIES FOR THE HIGH SCHOOL STUDENT

The subject social studies has largely crowded geography from the high school curriculum. Why has this happened? Primarily because in certain cases proponents of the social studies have been largely men and women whose advanced degrees were exclusively in education; they professed to see certain values in integrating geography, history, political science, economics, and sociology. *Theoretically,* the idea is good; *actually,* it is a mirage, for as the late Albert Perry Brigham once stated:

> If geography is to contribute to culture, it must be taught as a whole subject. It must not be dismembered and its mutilated fragments be confused in other studies. Few teachers of history, civics, and sociology are likely as yet, if ever, to be strong in geography. If ability exists, time is too short.

But Brigham did not stop there:

> This chopping up of geography, in social aggregates . . . is to be regretted. My experience is that it is only on rare occasions that we like to turn our steaks, chops, roasts, and potatoes into hash.

Nearly all geographers will agree. This is not because they believe high school geography should be undefiled by association with borderline fields. Rather it is because they know how carefully geographical material must be selected and treated for teaching purposes and because they alone know the objective of geography.

Nor should the historian attempt to teach both subjects, for

most historians know amazingly little geography. Their idea is to acquaint their students only with the names of places and with those physical features encountered in the study of history. While the writers believe that next to English, history ought to be the main subject of instruction in secondary schools, history *per se* is not enough. With it must go the collateral subject of geography. With the two, the student gets a general survey of the world—seeing it both in *space* and in *time*.

### HIGH SCHOOL STUDENTS NEED GEOGRAPHY

Most Americans never attend college, high school being the climax of their educational venture. Since this is true, the responsibility of the high school is of paramount importance. In the postwar world our citizens must know enough geography to make public opinion sufficiently enlightened to enable their country to make correct decisions. Therefore, our citizens must decide whether they will live within a worldwide, a global-political organization in the interest of collective security or within a national individualism with its struggle for power and raw materials. They must have sufficient geographical perspective to know that they cannot enjoy both.

If we are to have no future wars, our statesmen and our people must learn the elementary but nonetheless fundamental truth that they must become better acquainted with their world. How can this be accomplished? The ideal way, unattainable for most, is to *live* among other peoples. This being impossible, the next best way is thru the geography book and the geography teacher, by whom the student is introduced to all the countries and all the peoples of the world.

Students must be made to realize that ours is an interdependent world, that trade barriers promote and aggravate international distrust, fear, jealousy, and hatred; that people working and living in different kinds of regions must trade with each other; that nations must be actuated by the spirit of "live and let live." Tomorrow's leaders will be those who see and comprehend *world* problems. What better place to gain this comprehension than in the high school geography course?

### AVIATION AND MAPS

The war has gone far to make all Americans map conscious; there never was a time when so many people studied maps—the

"special language of geography." If the premise be accepted that everyone needs to know more about maps, then certainly the geographer is the one to teach students the secrets of maps. Until recently most Americans have been flat-earth thinkers. The global concept is very new.

Aviation, conceived globally, more than anything else can contribute to the future peace so hungrily awaited by the world. Ours will be an Air Age. Russia, Canada, Great Britain and the United States all are making plans for aviation that until now would have seemed fantastic. Control of the air will be one of the biggest problems facing mankind in the post-war world. Unwise use of air power could destroy civilization. Therefore, the people of every nation must understand the grim realities of geography which is the principal determinant of strategy. Public opinion, which determines our international policies, must understand the forces that underlie our foreign policies. The American people must send to Washington only statesmen who can do their political and strategic thinking in terms of a round earth.

### HIGH SCHOOLS MUST HAVE BETTER TRAINED GEOGRAPHY TEACHERS

For geography to contribute its fullest to the well-balanced curriculum, it must be taught well. This means that the teacher must have been trained in geography. Too often teachers trained in science or history are teaching geography. It is highly unfortunate for such persons to do so for they are unable to think geographically and do not understand the point of view or the philosophy. Frequently such teachers are not interested in the subject and an uninterested teacher cannot impart geography successfully to high school students. The result is unsound generalizations without either recognition or correct evaluation of the underlying factors.

No one can pick up his geography on the fly. Geographic concepts, and even the mere content of geographic knowledge, can only be attained by long and intensive study. The unprepared teachers stress facts rather than ideas.

### SUMMARY

As already pointed out, it is in the high school that geography has suffered most: here it is either non-existent or, if existent, it has been almost crowded out by social studies. Often it is poorly taught.

This war has made us aware of the fact that geography is more than an elementary school subject. We now know that it challenges the best minds we have. We know further that tho it is the background of all statesmanship, it is, except in a few countries, little understood in the world of states.

Will geography find an easy entry into the overcrowded high school curriculum? Obviously it will not, for geographers must fight against the prejudices of the generation which studied "sailor geography" and the distrust of representatives of other sciences —and all because of ignorance of what modern geography really is.

But geographers must persist in proving the value of their subject to school administrators. In a review of a geography text several years ago in the English journal, *Nature,* the reviewer said, "Whatever view may be taken of geography, no other human study permeates so many of the sciences: no other study is so necessary to the equipment of the educated man."

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## THE PACIFIC ISLAND WORLD

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The progress of the war in the Pacific has resulted in the American public becoming island conscious. First the tentacles of Japanese power spread from Nippon across thousands of miles of ocean to occupy hundreds of islands. Then the advance by our enemy was finally halted at Guadalcanal and the winning fight by the Allies proceeded slowly island by island. Within the last year amazing progress has been made, most of New Guinea has been won, island hopping with resulting neutralization of by-passed Japanese island strongholds has replaced the original slow advances from one island to another, and as this is written our forces are poised ready to strike at the Philippines, Formosa, Jap-occupied parts of China and the Japanese homeland.

A natural query from those watching the war in the Pacific is in regard to the character of the far flung festoons of islands and isolated specks of land, sometimes hundreds of miles apart, shown on a map of this ocean. In general the islands are of three types as

NOTE: The map of the Pacific Ocean, by the National Geographic Society, is excellent to use in connection with Dr. Freeman's article. EDITOR.

regards origin: continental, volcanic and coralline. Combinations of these types of origin are common. The continental islands are either fragments of a floundered continent or parts of an offshore mountain range most of which is below sea level. The continental islands are largely composed of rocks that only occur on continents or closely associated therewith, like granite, metamorphic and sedimentary rocks other than coral, and the islands themselves are usually but not always adjacent to continents. The volcanic islands occur both near continents and remote from them, and may be among the most isolated isles of the Pacific. The coral islands are restricted to the tropics and are typically low, flat and small in area. Many have the ring shape that is called an atoll.

## CONTROLS IN THE PACIFIC

The Pacific Ocean is the largest single earth feature and covers about two-fifths of the surface of the globe. While authorities differ as regards the southern boundary of the Pacific that ocean is usually considered to encompass 68,634,000 square miles. This greatest of all seas measures 10,000 miles across along the equator and extends 9,300 miles from Bering Strait to the Antarctic Circle.

All the wind belts follow in order from the equator to the polar seas. The westerlies and trade winds start drifts of the ocean water that the rotation of the earth and north-south running coasts of the continents help to divert into gigantic eddies. That in the north Pacific circulates in a clockwise direction and carries huge quantities of warm water, heated during its passage thru the tropics, into the temperate zone. The northern part of this North Pacific Drift is generally called the Japan Current. The South Pacific Drift circulates in a counter-clockwise direction. In the great southern ocean that extends around the world without interference from the continents a current has developed called the West Wind Drift. Along the west coast of South America is the cold Peru (Humboldt) Current. This in part represents a portion of the West Wind Drift that has been deflected north, and in part a welling up of cold water from the depths when the southeast trades blow away the warm surface water. The south flowing Kamchatka Current off northeast Asia and the California Current off the Pacific Coast of the United States are other cold currents. The location of the cold currents is of importance in that they contain abundant food for fish so that the best fishing grounds coincide with the cold waters. Since the trade winds cause a piling up of ocean water in the

western Pacific north of New Guinea, there develops an Equatorial Counter Current that returns the excess of water by flowing eastward in the belt of the doldrums.

The winds and currents of the Pacific are important controls over the plant and animal life that has reached various islands, and the sea routes followed by man in his migrations and explorations. Other controls, include: the huge size of the Pacific, the latitude that helps determine the climate, the usual arclike arrangement of the islands that form a group, and the types of plant life and human beings available for migration from the continents that border the ocean.

## Continental Islands

The principal groups of continental islands result from the seaward projection of mountain systems that have their origin in Asia and Australia. Off the east coast of Asia, extending in a general southerly direction from Kamchatka, Sakhalin and Korea, are a series of folds, the higher parts of which are above sea level and form the islands of Japan, Formosa and the Philippines. Chains of small islands, chiefly of volcanic origin, connect the large archipelagos or extend to the mainland. Thus the Kuriles are between Japan and Kamchatka, the Ryukyu Islands lie between Japan and Formosa (Taiwan), and the Bonin, Volcano and Marianas islands connect Japan with the Carolines and thru the Palaus to New Guinea. A series of seas: Okhotsk, Japan, East China and South China, lie between the continental islands east of Asia and the mainland.

From southeast Asia mountain arcs curve eastward from the mainland to New Guinea and then northward thru Borneo and Celebes to the Philippines. The resulting large islands, called the Malay Archipelago, separate the Pacific from the Indian Ocean, and are mostly included in the Netherlands East Indies. New Guinea, 1500 miles long, is the second largest island on earth (Greenland is the biggest), and has the outline of a bird hovering above the continent of Australia. Mountains in New Guinea exceed 16,000 feet in elevation and are high enough to be snow capped the year around altho located almost on the equator. Folds from New Guinea continue east to form New Britain and New Ireland in the Bismarck Archipelago or southeast thru the Solomon Islands. Further southeast other continental islands are the New Hebrides, New Caledonia and the two largest islands of the Fijis (Vitu Levu

and Vanua Levu). It seems possible that New Caledonia and the Fijis were once connected with Australia and that they are remnants from the sinking of part of a former large southern continent. New Zealand far to the south, may once have been connected to the same continent. However, the absence of Australian animals in New Zealand shows that the separation, if such occurred, took place an immensely long time ago. The complete difference in the animal life of Asia and Australia also is proof that those continents have been separated by a water barrier near the island of Celebes for a very long time.

Generally offshore from the mountain arcs and parallel to them are elongated troughs or "deeps." The deepest discovered spot in the ocean lies east of Mindanao and measures 35,400 feet in depth below sea level. Geologists believe that the sinking of the ocean floor to form the troughs was to compensate for the up-warping of the youthful mountain ranges.

The bedrock of continental islands includes metamorphic rocks formed by great heat and pressure like gneiss and schist and deep seated intrusive igneous rock like granite. Metal deposits are often associated with intrusive igneous and metamorphic rocks. Among these deposits in the continental islands are: the tin of Bangka and Billiton, Dutch islands off eastern Sumatra; gold, iron, chromite and manganese in the Philippines; copper, iron and pyrite in Japan; gold in New Guinea; nickel and chromite in New Caledonia; gold in the Fijis, and gold and other metals in New Zealand.

Sedimentary rocks like limestone, sandstone and shale are common on continental islands but are virtually unknown on those of volcanic origin. Minerals of value associated with the sediments are coal and petroleum. Coal has been mined chiefly in Japan and New Zealand. Minor occurrences have been discovered in the Philippines and Netherlands Indies. Oil is produced principally from the East Indies and very productive fields have been developed on Borneo, Sumatra and Java. Sakhalin has important deposits of petroleum and a small output comes from Japan and western New Guinea. The Philippines and New Zealand have possibilities for oil but no commercial wells have yet been drilled.

On the tropical continental islands in the rain forest belt the jungle is everything that may be imagined. Off the few trails the forest is vicious and almost impassable. Trees tower 100 feet or more and their leaves form such a dense canopy that the ground is in virtual twilight. The trees are bound together with hanging

vines (lianas), while underneath are ferns, herbage and bushes densely packed together. It is often raining and always hot and humid with scarcely a breeze able to penetrate below the tree tops to temper conditions. Men can hear but not see beyond a few feet thru the tangled vegetation. Leaf blades and thorns cut the skin and tear clothing; insects bite, burrow and poison the flesh; molds and fungi cause clothing and opened food to rot quickly. Water is polluted with germs and animal parasites and therefore dangerous to drink. Food is scarce; fruits are seldom within reach and animals are rare except for birds. The ground is often swampy, and in other places mountains rise steeply yet are clothed with almost impenetrable verdure. Travel under these conditions is so difficult that off the few trails a mile a day may be good progress. Our soldiers fought in the Solomons and New Guinea in jungles as described and many became sick from malaria, infected water and the hard conditions.

Typical rain forest and thick jungles are characteristic of Borneo, New Guinea, New Britain, the Solomons and parts of the Philippines. In such places the native inhabitants are generally at a low stage of culture. Mostly they practise some gardening in small clearings in the forest made by girdling the large trees and hacking down and burning the smaller vegetation. Sometimes the forest supplies food without planting, like the sago palm that grows in New Guinea swamps, but generally the starchy foods must be cultivated. Game and fish supplement the vegetable diet but are not constantly available.

Only on Java have the jungles been thoroly tamed. Here over 40,000,000 people live by agriculture on an island the size of England or New York state. This result is possible because the soil is fertile, the climate favorable, and the Javanese people are efficient farmers—an unusual combination for the tropics. In Java also are many successful plantations for rubber, tea, coffee, sugar, quinine and other tropical products, the Dutch providing needed capital and management. In the tropics insects and oxidation destroy the plant debris and humus and the excessive rainfall usually causes leaching from the ground of the minerals needed by planted crops so that such soil is generally poor. However, in Java there are numerous floodplain and delta areas and much ground in the hills is covered with volcanic materials and the soil developed under both conditions is highly fertile, since insufficient time has elapsed since the soils were formed for leaching by the percolating rain water to

occur. Some fertile lands, mostly along coasts and in river valleys on Sumatra, Mindanao and other islands, have been developed for plantations by outsiders, and for small scale sustenance farms by the natives, but most of the continental islands like Borneo and New Guinea are covered with uncleared rain forest and jungle and the usual poor leached soil is a great handicap to agriculture.

While the forests of the mountainous islands are hard to penetrate, they nevertheless possess a large variety of useful plants and woods. The forests provide some food, building materials, and wood for utensils, to the natives. The white man has utilized the trees of the rain forest to a small extent only. Probably hardwood timber for cabinet wood and other purposes has been cut in largest quantity from the forests of Mindanao. Mangroves are used as a source of tanning material especially in the British controlled parts of Borneo. Small amounts of wild rubber have come from some of the East Indies. Some fine kauri logs are exported from Fiji. In spite of these examples, in general the rain forests of the continental islands are an unused resource.

The continental islands in the temperate zone like New Zealand and Japan are very favorably located for living and working and therefore have been well developed for industry and commerce, which is in strong contrast to the tropical islands.

It may be noted that the continental islands on the American side of the Pacific are small, except for Vancouver Island, and are close to the mainland without the large seas characteristic of the Asiatic side. Even Bering Sea, on the north, is half included on the Asiatic side. Southern Vancouver Island is well developed but other islands off California and Alaska support few inhabitants.

## Volcanic Islands

The Pacific is rimmed with volcanoes on the east, north and west along a zone of weakness that has the shape of an enormous horseshoe. This line of volcanoes, many of which are active, coincides with youthful mountains that are in process of uplift as is proved by the frequency of earthquakes and many raised beaches along the zone. Besides this volcanic belt extending up the west coast of the Americas, thru the Aleutian Islands and south via Japan, the Philippines, the Indies and islands east of Australia to New Zealand, numerous submarine folds and fissures have developed that are the site of volcanic activity. The folds and fissures usually are of an arc shape as can be seen on any map that shows

the Aleutians, Japan or New Zealand. Lava pouring out on the sea bottom along such zones of weakness has built up elongated submarine platforms. At the largest vents volcanoes rise above the general platform surface and many of these have been built above sea level to form islands. Near Hawaii the ocean is over three miles deep and two volcanoes are over two and one-half miles above sea level so that the entire volcanic pile has accumulated to a height of nearly six miles above the ocean floor. When looking at a Pacific volcanic island one should realize that at least 90 per cent of the lava mass is invisible because it lies below sea level. Sometimes arcuate festoons of volcanic islands extend for hundreds of miles and one or more islands are always in sight from a ship following their course. Examples include the Ryukyu Islands between Japan and Formosa, the Marianas, the Solomons, and the New Hebrides. In the case of the islands mentioned the curving fissures from when the volcanoes emerge are most probably associated with earth movements in Asia and Australia. In addition some submarine volcanic platforms of volcanic origin have developed remote from the continents. Most notable is that of the Hawaiian group that extends nearly 1800 miles from Ocean Island southeast to the island of Hawaii. The Marquesas Islands in the south Pacific are also quite remote from other groups. Other islands mainly of volcanic origin are Samoa and Fiji groups and Tahiti, largest of the Society Islands. North of the equator the northern Palaus are volcanic, and the Truk Islands, Ponape, Yap and Kusaie, all included in the Caroline Islands are also volcanoes. The rest of the Carolines are low, coral atolls. Off South America the Galapagos Islands leased by the United States from Ecuador for naval and air bases, and Juan Fernandez off Chile, are the largest of those of volcanic origin.

In the south Pacific there are several volcanoes that form single isolated islands among them; Pitcairn, first home of the Bounty mutineers, and Norfolk to which some of their descendants migrated. Perhaps Easter Island, noted for its curious stone statues, is the most isolated of all.

In the Pacific one of the most distinctive things, that is constantly emphasized by residents and visitors, is the difference between "high" and "low" islands. The "high" islands, mostly of volcanic origin, abound in food as compared with the "low" islands of coral origin. The mountainous islands are large in proportion to the land area of coral atolls, have a variety of trees, plenty of water,

fertile soil and can support considerable populations. The low islands have few plants except the coconut palm, little or no drinking water, scanty soil and each coral isle can support few inhabitants. Better logs for building canoes are also available in the high islands than the coconut trunks that have to be used, for lack of better timber, on the low islands. While most of the people on the high islands lived by preference along the shore yet food and other resources could be secured inland from the coast clear to the mountain tops. The ocean generally supplied fish and shellfish, the swampy lowlands might be planted to taro, the uplands especially on the dry side of an island (the west or leeward in the trades) might be planted to sweet potatoes, the fertile valleys and lower slopes were good locations for breadfruit, from the mountains came cooking bananas, kukui (candlenut), guavas, hardwoods for weapons and utensils, and bird feathers for decorative clothing. In times of necessity a starchy food was available from the pithy trunk of the tree fern. Cloth was made from the inner bark of suitable trees, and mats and sails were woven from the leaves of the pandanus and coconut fiber. Coconut palms fringed the shores and furnished food, oil and materials for manufactures. Thus fishlines, nets and ropes were made from the coconut fiber, called coir, which is highly resistant to the action of salt water. The roofs and walls of houses were usually thatched with pandanus leaves, altho palm fronds were also used to some extent.

Often in the tropics a coral reef surrounds a volcanic island, and excellent fishing is available in the lagoon within the barrier. These offshore barrier reefs may also provide protection from storms and waves and numerous harbors have been formed in this way including that of Honolulu. Truk, the naval base of Japan in the Carolines, is a nest of volcanic isles surrounded by a barrier reef, the whole providing superior places for anchorages and harbors. Truk is difficult to attack by sea but was successfully immobilized by American air power. Some Pacific harbors develop from the sinking of a high island and resulting drowning of the mouths of valleys carved on the lower mountain slopes. Other notable harbors, like Pago Pago in American Samoa, occur where waves breached one side of a volcano, the crater of which was below sea level.

The major seaports of the mid-Pacific are located on the larger islands. No city of real size and importance is built on a coral atoll, altho such localities may serve as first class air and sea bases. Only Honolulu and three cities in New Zealand exceed 100,000 in popula-

tion. Hilo (24,000) on Hawaii, Noumea in New Caledonia, Suva on Fiji, Papeete on Tahiti, and Apia on Samoa are smaller cities of importance as seaports and commercial centers. The high islands in the trade winds are generally healthful and a considerable tourist trade exists in Hawaii and to a less extent in Fiji and Tahiti. Health conditions in the wet tropical islands of the Solomons and New Hebrides are not so favorable, malaria and many other diseases being prevalent.

Coconut groves along the coasts of the Solomons, New Britain and New Guinea and other tropical high islands are the basis of the principal commercial activity and copra is often the only export of an island.

On the volcanic islands large sugar plantations have been developed by the Americans on Hawaii, the British at Fiji and the Japanese on Saipan in the Marianas. On Fiji the plantations are located on river bottom lands and coastal lowlands on the two largest islands. In Hawaii sugar cane is grown on the lower mountain slopes and lowlands on Oahu, Kauai, Maui and the big island of Hawaii itself. In none of these islands were the natives numerous enough or willing to work on the plantations so that outside labor had to be imported. In Hawaii Chinese and Portuguese were first used but today Japanese and Filipinos do the work. In Fiji, Indians, mostly of the Hindu faith, were brought in and now number almost as many as the native Fijians. At Saipan the Japanese brought in their own people. The natives, like the Fijians, produce little for sale from the land—most of their farming is of a sustenance nature.

On the high islands the natives originally lived in villages rather than on individual farms and the custom is still generally followed. Each valley commonly supported a village which by preference was located on the beach or as close to the sea as the topography permitted. On some islands like the Marquesas and parts of Kauai and Molokai in the Hawaiian group, a valley was often isolated from its neighbors by such steep and almost impassable cliffs that communication was by sea rather than by land from one village to the next.

As mentioned, a variety of food could be produced on the high islands. Pigs were raised, and a poor sort of chicken was kept. Pigs furnished most of the meat to supplement the starchy foods, fruit and fish. The seedless breadfruit, plantain, taro, yam and sweet potato were the chief native sources of starch. These have now been

supplemented by arrowroot, cassava, and improved varieties of bananas. Sugar cane, coffee, papaya, mango, lime, orange, lemon, shaddock and ginger are among the useful plants introduced by Europeans. Cattle and goats are found on the larger islands where grasslands exist like on Hawaii and New Caledonia. European deer were brought into New Caledonia, Guam and some other islands. Both pigs and goats have become wild animals on many of the high islands.

### CORAL ATOLLS

The "low" islands are made of coral and usually have an irregular ring shape around a lagoon. Such an island is called an atoll. Generally the coral ring is broken into many pieces, separated by channels leading into the lagoon, but the whole circular group is commonly considered one island, altho quite often individual names are given to the larger islets as in the case of Wake, Tarawa and Enwietok. The coral atolls are wholly within the tropics as the reef forming organisms can only survive in warm waters.

Two leading theories have been advanced to account for the coral atolls. That of Charles Darwin has three stages: (1) The coral built a fringing reef around a volcanic island, (2) the island slowly sinks and the coral reef is built upward and forms a barrier reef separated by a lagoon from the shore, (3) the volcanic island has sunk out of sight and a lagoon occupies the former land area whose outline is reflected in the roughly oval form of the atoll. An American geologist and geographer, the late William Morris Davis, was a strong supporter of Darwin's theory. Another theory is that of Sir James Murray who would have the coral forming a reef on the outer limits of a shallow submarine platform. Likely most such platforms would result from erosion of a volcanic island and so would have the approximately oval shape of a volcanic peak.

No matter how they may have been formed, the geographer finds that the atolls have similar characteristics wherever they occur, altho in size they vary. Many are only a few miles in diameter, while a few huge affairs up to 50 to 100 miles across occur. Atolls are seldom circular, generally one diameter is longer than the other. Thus Canton Island, one of the Phoenix Islands, a group of atolls, and now used by the United States Airforce as a base, has a central lagoon that measures about four by nine miles. Enwietok atoll is a near circle with a diameter of twenty miles. Some coral islands lack the central lagoon which has either been filled to be-

come land or the island itself has been elevated enough for the feature to disappear. Nauru, Ocean, Howland, Baker and Jarvis islands are of this nature. On Rarotonga, one of the Cook Islands, the former lagoon, now elevated, is used for gardens from which winter vegetables are exported to New Zealand.

Except near the Americas, the eastern third of the Pacific is practically devoid of islands, either volcanic or coralline. In contrast to this unbroken sea the western and mid-Pacific contains hundreds of atolls and since each atoll may be broken into many islets there are thousands of low islands scattered over the tropical parts of the ocean. The greatest concentration of atolls is in the Taumotu Archipelago (also called Paumotu, Low and Dangerous Archipelago). Except for four volcanic centers the Carolines are of coral. The atolls of the Marshalls are arranged in two parallel chains, an eastern and a western. The Gilberts, Ellice and Tonga islands are atolls, as are the Union (Tokelau), Cook, and Phoenix groups. In addition there are many isolated low isles of coral, like Swain, Palmyra and Howland, so far from others that they are not included in any group. Frequently the atolls follow an arcuate course and rise at intervals from a submarine platform or uplift, likely a zone of volcanic activity altho cones above sea level may not occur. Sometimes a rocky stack of lava, representing the last remnants of a volcano eroded by the waves, is found surrounded at some distance by coral reefs, like La Perouse Rock and Gardner Pinnacle in the Hawaiian Islands. While the barrier reefs of the atolls protect ships in the lagoons from currents and waves, they are themselves a great danger to navigation especially as charts of Polynesia and Micronesia are often incomplete and inaccurate. The low islands and reefs are hard to see and swift currents and storms add to the hazard. Occasionally some atoll is completely overwhelmed by a hurricane and the giant waves associated with it that may wash entirely over the low land and destroy most of the palms and inhabitants.

After a coral reef has been formed the waves may break off fragments and heap them together. Gradually the work of the waves and other agents builds up the land a few feet above high tide, coconuts and pandanus trees start growing in the scanty soil and the island then is ready for human occupancy.

On the low islands the natives are as dependent on the coconut palm and the outrigger canoe as the Arab is on the date palm and

the camel. The coconut palm supplies both food and material for many sorts of construction. The meat is eaten fresh and also dried to make copra from which coconut oil is pressed. Green nuts supply a refreshing drink. Palm wine may be made from juice coming from the flower stalks. The half-shells may be used for cups. The fiber of husks, called coir, is made into rope, fish nets, twine, mats and brooms. While the wood of the coconut palm is not first class, lacking better material, the natives use it for the timber of their huts and hollow out the logs for canoes. The leaves and shells are used for fuel. In the first World War coconut char, used in gas masks, was made from the shells. A medicine is brewed from the roots.

Water is a problem. The islands have so little elevation above sea level that wells may obtain only salt water. However, sometimes a lens of potable rain water overlies the salt water and can furnish a small supply of drinking water, but such wells are soon ruined by influx of sea water if any large amount of water is taken. On many low islands cisterns and green coconuts are the only sources of drinking fluid. Water is sometimes imported, and on islands used by the military distillation plants, to make fresh water from sea water, are erected.

The soil of the low islands is broken from the coral by the waves and winds. It is thin and poor, and few plants except coconuts can grow on it or withstand the infiltration of the salt sea into the ground water supply. On the more barren islands, coconuts, the rather poor fruit of the pandanus, and fish are the only available foods. Sometimes the natives by much labor construct a garden of artificially fertile soil. Within a stone wall or pit to hold the soil against wind and rain wash, all available plant waste and other refuse is collected to supply needed humus to the sterile coral sand. Canoe loads of dirt from "high" islands, if such are within practicable sailing distance, are also imported. In the garden, of necessity small, are planted breadfruit, bananas, other fruits and various vegetables including taro, which improves greatly the amount and variety of food available.

Copra is the only export from most coral islands. Chinese traders are the usual collectors of the commodity and in most villages the store is run by a Chinese who may be married to a native woman. The copra is usually shipped to larger centers on sloops, luggers or other sailing vessels. Such ships are often equipped with

auxiliary engines, used during calms and when entering and leaving ports. The currents among the reefs and channels are dangerous especially if a vessel lacks speed to cope with them.

Pearls and pearl shell are quite frequently obtained from the lagoons of atolls in the Tuamotus and other groups. Tortoise shell is sometimes available. Dried sea slugs, called trepang or beche du mer, are sometimes prepared for export to China where they are eaten.

The most significant animal life on the low islands consists of birds. Many of these nest in great numbers on isolated islets where they are undisturbed by man like at Wake, or on Midway or Bird islands of the Hawaiian group. Birds have sometimes been slaughtered for their feathers, and both eggs and birds are eaten altho they have a fishy flavor. However, the most valuable product of the birds is guano and indirectly phosphate rock. On low islands in the trade winds, rain is too scanty to wash away the bird droppings and other refuse which accumulate and change to the brownish guano that is a valuable fertilizer because it is high in nitrogen and phosphorus. On some islands, notably Nauru and Ocean, just south of the equator, the phosphorus from the guano has interacted chemically with the coral limestone to form phosphate rock. This is quarried and exported to the temperate zone to use on depleted soils. Nauru and Ocean islands, together with Christmas Island, 2,000 miles to the east, supply one-tenth of the world's output of phosphate rock. Several islands in the western Carolines, and Anguar in the Palaus, also produce phosphate rock.

Guano has come from scores of islands but is now largely exhausted. An old law allowed ship captains of this country to claim sovereignty for the United States over any unclaimed island valuable for guano so that a discoverer could legally mine it with protection from others. Under this law several dozen islands were claimed for the United States and many were occupied for a time. While claims to many lapsed thru non-occupancy, title to Howland, Baker, Johnston, and Jarvis were secured in this way. On the other hand settlers on Swain's Island north of Samoa requested the United States to assume guardianship, and Wake Island was claimed by a naval captain nearly a century ago. Other nations had similar laws to our guano act, and some islands had several claimants, each of whom put a different name on the map which naturally led to confusion. Thus Canton Island under the name of Mary Island was claimed by Great Britain. In 1938, when remote

oceanic islands had obvious value as air bases, an agreement between Great Britain, New Zealand and the United States provided for the joint use by the countries concerned of numerous atolls in the mid-Pacific. The agreement covered Canton Island and others included in the Phoenix Islands, and all other islands claimed by the British Empire between Samoa and Hawaii. Among these are: Washington, Fanning and Christmas islands north of the equator, and Malden, Starbuck and Flint south of the line. Also included were three of the Ellice Islands, best known of which is Funafuti. Islands shared between the United States and New Zealand are the Tokelau (Union) group, Danger Islands, Rakahanga, Manihiki and Tongareva (Penrhyn). All mentioned are low coral islands. Ownership of the United States atolls was not affected by the agreement. During the present World War, Canton Island has become a major air base on the route from Hawaii to the south Pacific and numerous other atolls have emergency landing fields or lagoons used by amphibious and float planes.

### MELANESIA, MICRONESIA AND POLYNESIA

The Pacific islands east and north of Australia were divided by the early navigators into three parts. The large island of New Guinea was named from the resemblance of its inhabitants to those of the Guinea Coast of Africa. The neighboring islands south of the equator and northeast of Australia including the Bismarck Archipelago, Solomons, New Caledonia, New Hebrides, and Fiji, were also inhabited by black or dark brown peoples. Hence this island area was called Melanesia, meaning "black islands" from the Greek words, melanos (black) and nesos (island). The region of small islands mostly north of the equator from the Pelews and Marianas on the west thru the Carolines, Marshalls and Gilberts to the Ellice Islands south of the line was called Micronesia (small islands). The great triangle from Hawaii south to New Zealand and east to the Marquesas Islands and lonely Easter Island, was named Polynesia (many islands).

The eastern Pacific has relatively few islands compared with the western Pacific and no special name has been given to this region. The islands that lie a few hundred miles off the coast of South America like Juan Fernandez and the Galapagos Islands had no inhabitants when discovered by Europeans, and few even today reside there.

The natives vary widely as regards race and culture in dif-

ferent parts of the Pacific world. Those on the continental islands off southeast Asia are mostly Malays, altho a few Negritos still dwell in the forests of interior Borneo and mountainous eastern Luzon. The Micronesians (people of the little islands) somewhat resembled the Malays and lived originally from the Marianas to the Gilberts. The Ellice Islands are included with Micronesia on the southeast but are actually inhabited by Polynesians. The dark Melanesians are considered to be of a lower order of civilization and culture than the Polynesians and Micronesians, altho some Melanesians build substantial houses and are clever boat makers. The Polynesians (people of the many islands) over a thousand years ago sailed thru the populated islands near Asia from somewhere in the southeast of that continent to settle on the then uninhabited islands from Hawaii and New Zealand and the mid-Pacific as far as the island world extended to the east. Fiji on the west was populated by Melanesians but they had absorbed much of the Polynesian culture. Polynesians are a mixed race of superior physical and mental characteristics. The race is supposed to have resulted from the intermarriage of Melanesians, Malays, a Caucasian element and possibly some Mongolians.

# GEOGRAPHIC INTERPRETATION OF SOME RUSSIAN PLACE NAMES

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Newspapers and magazines constantly call our attention to Russian place names. Places, not only along the Western Front, but also Arctic Coast port or air base, mining town or industrial center, appear on front pages thruout the nation. Many of these articles have accompanying maps and we are able to get a spot location immediately. Thus we become familiar with these most frequently appearing. We can pronounce the names, but the names of the less frequented still puzzle us. Wouldn't it be worthwhile to look to the meaning, thus read more into the place name itself?

From time to time geographers call our attention to location as a prime factor in the study of geography. True as this is, it resembles, however, "the gift without the giver." Knowing the meaning of the place name often explains, in part at least, its location. Meanings open up wider vistas and understandings, essential to a more complete picture.

During these times and the peace that follows, Soviet Russia will claim increasing attention and interest. Teachers will find that they will include more and more of its geography and history in their daily classes. Courses of study and curricula will make their demands. For a more complete knowledge will not an understanding of the meaning of place names contribute?

A sampling of Russian place names follows. Some relate to physical features such as rivers, lakes, plains and highlands. Others receive their names because of association with some person, a tribe of people, an explorer or a military leader. Perhaps this brief paper may serve to encourage teacher and pupil to continue the same course and lengthen the list far beyond the scope indicated here. A few suggestions by the teacher of the meaning of prefixes and suffixes may turn drudgery into worthwhile learning and lasting interest. Gazetteers and dictionaries, travel books and the like provide suitable reference.

## GENERAL CONSIDERATIONS

Russia is named from the Russi, a tribe of Norsemen. Little did they suspect that when they lent their name in the 9th century, it would some day embrace one-sixth of the land surface of the

globe. Little did the Scandinavian Varangians from their nerve center in the Valdai Hills suspect that their descendants would build fortifications on the shores of the American continent. Russian history swept eastward as ours swept westward. Both peoples met on our Pacific shores. Both made wide and ample use of their rivers, their tributaries and portages. Each records this movement today in the place names along the way. Trans-Allegheny, Trans-Ohio and Trans-Mississippi like Trans-Caucasia, Trans-Caspia, and Trans-Baikalia in Russia indicate the direction whence the advancing peoples have come. Rivers, portages and ostrogs contributed to the development of Russia's history. As the people ventured from their Valdai strongholds lands were won by the use of these three items. The rivers, broad and inviting, lead by narrow crossings into other river systems. Usually fortresses or strongholds were established to control the important thorofares. These were known as ostrogs coming from the Slavic *Ostrow,* which means island. Ostrogs were islands of safety projected out in the wilderness which later became frontier.

The Russian word for portage, *vólok,* means the place between two rivers or bodies of water, over which boats were "dragged" or "pulled" rather than "carried" as indicated in the word portage. Russian river boats were dragged; canoes carried! At either end of a portage an ostrog provided refuge.[3] Many place names of settlements thus situated use vólok or some modification. The Valdai Hills region, once called Volokovskii Forest, indicates that it was the Portage Forest.

Along the Arctic coast appears a narrow strip of low, mossy, flat land known as *tundra,* a Tartar word taking its meaning from the character of the landscape. South of the tundra a wider belt of coniferous forest, birch and deciduous softwoods, known as *taiga,* appears. Taiga means a forest. Farther to the south and east of the Caspian appear the steppes, a Slav word meaning uncultivated waste land, and applied to the extensive desert plains in Russia.

One wonders just what names may properly be called Russian. Influence of neighboring peoples has left its mark in the origin of many present day names. Thus we find Scandinavian and Finnish from the west and north; Greek, Phoenician and Turkish from the south; Tartar and Oriental on the east. Each expresses an incident in history or a landscape in geography.

## HIGHLANDS AND MOUNTAINS

Highlands and mountains inspired the early travelers to record their impressions in lasting place names. The Persian prefix *Koh,* meaning mountain, became fixed on this great 900-mile wall between the Caspian and Black seas, as Caucasus, meaning mountain on mountains, descriptive of their great height.

Ural, meaning belt or girdle, suggests the mountains to which the early Russians conquered. Altai, from the Tartar *Altun* or *Altan,* becomes Altai or Golden Mountains, a long narrow steep-sided range between Mongolia and Soviet Russia. Doubtless, this name suggested itself in contrast to the barren steppe region previously encountered. Here above 3000 feet they found taiga and a water supply, more important to them than the lead and zinc for which they were subsequently known. These mountains culminate in Mt. Belukha, over 15,000 feet in altitude, from which several glaciers radiate. *Beluk,* a Slavic prefix meaning white, appropriately describes this snow-capped mountain.

## NATURAL RESOURCES

A Slav stem, *Chern,* meaning black, appears referring to soil, a natural resource. Chernozem names the black rich soil of the Ukraine as Chernaya refers to the Black River, and Chernobsi to a town built on the black soils in western Russia. Chernogoisk, a coal mining town on the Yenisei south of the Trans-Siberian Railway, again suggests the black color of the resource.

Another Slavic prefix, *Bor,* meaning wood, refers to an old and important Russian resource, the forests. Towns situated in or near the coniferous or deciduous forests indicate the dependence of the Russians on their forests. Borovichi, north-east of the Valdai Hills on the Msta River, speaks of the importance of the wooded shores and areas nearby. So also does Borispol, Borisov, or Borkhaya.

The Slavic stem, *brog,* meaning dam, indicates the importance of water power. Kolabrog, around the dam, was a natural location for a settlement.

Building stone and sand are other natural resources. *Krem,* meaning a stone building, finds its way into Kremlin, the stone fort of Moscow, former residence of the nobility. The character of river banks and their suitability as landing places may be traced to the place names along rivers. Levinski Pesok or Levin's Sand, a beach along the River Yenisei, as described in Nansen's "Through Si-

beria'' is a point in question. In contrast to a sandy low shore line, the Slav stem *Kupa,* meaning headland or bluff, describes surrounding topography. Perekop, the gate to the headland of Crimea, speaks of the nature of such topography. Kupiansk translates as a town on the promontory. Often these summit areas furnished safe retreats in times of flood.

Owing to the importance the Russians placed on furs, the Slav stem *bobr,* meaning beaver, suggests places where this commodity was plentiful. Bobronia River was so named from the number of furs taken from this stream in Silesia and Russia. Could the present town of Bobrovitsky have been an early collecting center for fur?

### RIVERS

No other topographic feature has contributed more to the expansion of Russia than its rivers. Just as our West was opened by following the Ohio, Missouri, or Platte, so Russia's East became first penetrated along its rivers. Here far flung ostrogs furnished safe stopping places as stockades did for our explorers. Yermak crossed the Urals in 1579, reached the Yenisei River in 1610 and planted there a town of Turuchansk opposite the mouth of the lower Tunguska, an eastern tributary named after the Tungu people. Up this they passed in 1627, thence to Bering Sea by the Kolima and Anadyr rivers.[4] Yermak's travels furnishes an excellent example of the use made of the rivers.

### PREFIX AND SUFFIX

Frequent among Russian place-names the Slav suffix *sk, ska, ski,* or *skia,* depending upon the gender, appears. Often annexed to the names of rivers, founders, or groups of people, it denotes a place, settlement, or town. In the Lena River district dwell various groups of people, known collectively as the Yakuts, a Tartar tribe. On the river at a convenient stopping place stands the town of the Yakuts or Yakutsk. Formerly serving as a collecting center for furs and gold, now grown to a city of 50,000, Yakutsk yields iron for the home front. The city has its own electric lights, a library, and good schools and boasts that most of the inhabitants are literate. All this, over 1000 miles from the nearest railway![5] Other examples with this suffix or a modification of it, are:[1]

Tomsk—a town on the Tom River
Pinsk—a town on the Pina River
Omsk—a town on the Om River

Irkutsk—a town on the Irkut River
Okhotsk—a town on the Okhota River
Jarensk—a town on the Jarenga, strong river from its current
Kesilskaia—a town on the Red River, from color of its sediments
Sviatskaia—the town of Sviatovid, a Slavonic diety
Dmitrovisk—the town of Demetrius
Kupiansk (Kupiszki)—the town on the promontory
Krasno-Ufimsk—the beautiful town on the Ufa River

The prefix *stary* means old, while *novo, nowy* and *nau* mean new. A few examples of these may include:

Starobielsk—the old town on the Biela River
Staroi-Oskol—the old town on the Oskol River
Novi-Oskol—the new town on the Oskol
Novo Zembla—the new land beyond the wood (coniferous forest)
Novobielaiaskaia—the new town on the White River (clear flowing water)

*Yeni* meaning new has various combinations:

Yenisei—a Turkish word meaning the new river
Yeniseisk—a new town on the Yenisei River

*Bor,* a Slavonic prefix meaning wood:

Borovsk—a town in the wood
Borisoglebsk, Borisov, Borispol—refer to the forests or strips of poplar along streams

*Werch,* a Slavic prefix meaning summit has many modifications:

Verkne-Dnieprevosk—a high town on the Dnieper (bluffs)
Werchne-Udinsk—the high town on the Uda River
Verkne-Kolynski—a high town on the Kolyma
Verkho-Sousensk—a high town on the Sosna River

*Veliki,* Weliki, a Slavic prefix meaning great:

Velikiha Luki—the great marsh in Russia
Welikaia—the great river

Forty miles from the mouth of the Indigirka River stands Russkoye Ustye. The place name literally means river mouth. Formerly an exile town, once described as a town of "six chimneys," it may become an important Arctic air base. The Ustye or Usto (sometimes Ust) frequents the Russian maps and usually refers to towns situated where rivers empty into other streams or the oceans:

Velikii Ustyug—the great mouth of the Yug River
Ust Usa—a town at the mouth of the Usa River
Ust Sysolsk—a town at the mouth of the Sysola River

*Kara,* a Turkish root meaning black centers in Russia where the Turkish influence has been felt:

Kara Kum—Black Desert lies south-east of the Caspian Sea
Kara Bugazki—a gulf indenting the east coast of the Caspian
Kara Kalpák—a province just east of the Caspian Sea
Karaganda—a city in the country of black people
Kara Sea—the Black Sea of the Arctic

*Gorod,* a Slavic stem meaning fortress or castle; a stronghold, often along rivers:

Novorod—new fortress or castle
Nizhni Novgorod—nishni (lower) or lower new Fortress (now Gorki)

*Grad,* a suffix meaning city is widely used thruout Russia:

Leningrad—a city named for Lenin, early Russian leader
Stalingrad—a city on the Volga named for Premier Stalin

*Krasna,* a Slavic stem meaning beautiful. Used in towns that have beautiful views from their positions or are beautiful within themselves:

Krasnopol—a beautiful city
Krasnabrod—beautiful ford across the river (brod-ford)
Krasnovodsk—beautiful town on the eastern shore of the Caspian
Krasno-Ufimsk—beautiful town on the Ufa in the Ural region

*Teply,* used in the Slavonic tongue meaning warm, appears on the map as:

Teflis, Georgia—in the Caucausas region celebrated for its warm baths

The Persian stem *stan* means a district or region. Georgia, formerly Gurgistan, refers to the district watered by the Kura River (Gura).

## OTHER NAMES

Kiev, an old Russian capital, mainly built on hilly bluffs of the right bank of the river to about 300 feet traces its origin to the Phoenician word for cave. Astrakhan is named by Tartars after one of their kings. Odessa's origin is Greek, and Baikal is a Turkish word meaning rich sea. Khabarov, a Cossack chief sent to conquer the Amur region, lends his name to Khabarovsk, the political and commercial center of the area, now with a population just shy of 200,000.

Komsomolsk, described as the magic city of the east, has within its fourteen-year history collected a population of 70,000 enthusiastic workers.[2] Situated on the lower Amur, it has the largest iron and steel mills and shipyards of Soviet Far Eastern Empire. "The

City of Youth" as the name means, stands as a monument to what people can accomplish when they work together.

*Mir,* either a village where people live in small communes (mirs) or *mir* meaning peace, finds frequent use. Zhitomir, capital of a southern province in the Ukraine; Miropol translates into a town of peace, and Mirgorod the fortress of peace.

Sea base and railroad terminal of the far eastern shores, Vladivostok seems appropriately named. Translated, "I rule the East," it is hoped that in the years ahead the combined Soviet republics in their global relations may become for the world a fortress of peace as Miropol has to a small area within its borders.

"Geography, indeed a subject full of interest to the young mind, has too often been taught in such a way as neither to delight the imagination with vivid pictures, or to stimulate inquiry by a frequent reference to the history of names," so wrote John Stuart Blackie from Edinburgh in 1875. How much progress have we made since? Could the same be laid at the feet of the American teacher today?

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## INTEREST-STIMULATING DEVICE

### WHERE ARE YOU?

Where on the earth are you if

| | | |
|---|---|---|
| 1. | every other place on earth is south of you ..... | 1. ..... |
| 2. | you weigh more than at any other place on earth | 2. ..... |
| 3. | the north seeking pole of a compass needle points directly down ..... | 3. ..... |
| 4. | in the center of the water hemisphere ..... | 4. ..... |
| 5. | it is impossible to state definitely your longitude | 5. ..... |
| 6. | the twilights are very short ..... | 6. ..... |
| 7. | the days and nights are always of equal length . | 7. ..... |
| 8. | located where every day begins and ends ..... | 8. ..... |
| 9. | your latitude is 0° and longitude, 0° ..... | 9. ..... |
| 10. | closest to the center of the earth ..... | 10. ..... |
| 11. | the south seeking pole of a compass needle points directly down ..... | 11. ..... |
| 12. | the compass needle points due north and south . | 12. ..... |
| 13. | you weigh less than at any other latitude ..... | 13. ..... |
| 14. | you have 6 months of daylight and 6 of darkness every year ..... | 14. ..... |
| 15. | on a parallel which is a Great Circle ..... | 15. ..... |
| 16. | "sun" time and "standard" time are the same | 16. ..... |
| 17. | you are in the center of the land hemisphere ... | 17. ..... |
| 18. | on September 22, at noon, the sun is directly overhead ..... | 18. ..... |
| 19. | daylight on September 22 is 24 hours long ..... | 19. ..... |
| 20. | the Pole Star is directly over your head ..... | 20. ..... |
| 21. | the rotation of the earth merely turns you around ..... | 21. ..... |
| 22. | Christmas comes in midsummer ..... | 22. ..... |
| 23. | the Pole Star is visible only on the horizon .... | 23. ..... |
| 24. | the length of a degree of longitude is zero ..... | 24. ..... |
| 25. | the rotation of the earth moves you with a velocity of over 1000 miles per hour ..... | 25. ..... |

W. O. BLANCHARD

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# EDITORIAL NOTES AND NEWS

DR. RODERICK PEATTIE of the department of geography, Ohio State University, has flown to Johannesburg to become Chief of the Office of War Information in the Union of South Africa.

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DR. GUY-HAROLD SMITH of the department of geography, Ohio State University, is a member of the committee that is setting up a new curriculum in international studies in Ohio State. The program is for those hoping to work abroad in the diplomatic service, in any one of the many international organizations to be set up after the war, or for those desiring to know more of the world even tho they live in this country. After preliminary studies in the first two years, the students will select a particular area for their major field of concentration and this may include such fields as diplomacy and international politics, foreign administration, international economic relations, or language and literature.

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DR. LEWIS F. THOMAS has been appointed head of the Department of Geography at Washington University, St. Louis. Dr. Carl Tolman, now on war leave with FEA in Washington, D.C., heads the Department of Geology. These two departments are the outgrowth of the recent reorganization of the Department of Geology and Geography headed by the late Professor Walter E. McCourt.

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Some interesting findings are coming out of the study of the Boston school system. The survey was promoted by the Boston Finance Commission and was headed by Dr. George D. Strayer. The report indicates that the schools do not "make use of the rich resources of Boston's cultural institutions and local history and surroundings." Also, the pupils are offered "little to prepare them for living as citizens of the community and understanding the social problems of today." Another finding reveals that "no high school offers a course in sociology and the only way a pupil in most high schools can study economics is to enroll in a commercial course. That is the only way to get economic geography." Does part of the answer to this problem lie in the curriculum not providing adequate geography courses and field work? May it also be that the administration does not require adequate preparation in geography for those certificated to teach geography?

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Dr. W. C. Lowdermilk, Assistant Chief of the U. S. Soil Conservation Service, recently reported the world's annual cut of wood is estimated to be 1.2 billion tons. This ranks close to coal production which is 1.3 billion tons. If properly managed, the forests' annual cut can be maintained by an equivalent annual growth. At the same time, the forest while growing is a great benefit to humanity in scores of ways, such as checking soil erosion, diminishing flood hazards, providing wild life refuges, and affording recreational areas.

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The U. S. Department of Agriculture recently estimated that hybrid corn in 1942 and 1943 increased the national corn harvest by nearly one and a third billion bushels. Corn breeders thus made it possible not only to grow the needed corn but also to release land usually planted to corn for other crops, such as soybeans.

## GEOGRAPHICAL PUBLICATIONS

Eliot G. Mears. **Pacific Ocean Handbook.** 198 pp., 58 illustrations, maps. Appendices. James Ladd Delkin, Stanford University, Calif., 1944.

The *Pacific Ocean Handbook* is a very useful compendium of concise information about the Pacific as an ocean, its shore lines, seaports and contained islands. In addition the sections on tides, winds, storms, currents, fogs, navigation, volcanoes, earthquakes, geomagnetism and sea water are apropos to the world as a whole and are not limited to the Pacific. The book was written for use by both military forces and civilians. Teachers wanting information about the Pacific area will find it informative and accurate. The type is small but legible, and the pocket size of the book makes it easy to carry.

From the standpoint of geography teachers it is regrettable that space limitations precluded descriptions of the different races in the Pacific area and the relation of the inhabitants to their environment. However, those teachers interested will find that several of the War Background Studies issued by the Smithsonian Institution contain extensive information about the Polynesians, Micronesians, Melanesians, Malays, Filipinos and other Pacific races.

In both the text and the appendix there are many practical suggestions for members of the armed forces. Examples include: how to turn salt water into fresh water, sea food for the shipwrecked, food plants and jungle pests of Pacific islands, and suggestions as to the effects of the weather on military operations. The appendix contains tables of areas in square kilometers, populations, airline and navigation distances, two pages of standard times in numerous localities, and official weights, measures and currencies used in the chief Pacific countries. A comprehensive index and numerous small maps help to make the information in the book clear and easy to find by the user.

OTIS W. FREEMAN

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